

## On the *Geostiba* fauna of Georgia. VII. Five new species from the Kakheti region and additional records (Coleoptera: Staphylinidae: Aleocharinae)

With 37 figures and 2 maps

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<sup>†</sup>Volker Assing died completely unforeseen after sending the last corrections to this article. Unfortunately, he was no longer able to confirm their implementation. The editorial team hopes to have implemented everything in his will. We mourn the loss of an outstanding taxonomist and esteemed colleague.

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### Abstract

Five species of *Geostiba* THOMSON, 1858 from the Kakheti region, Northeast Georgia, are described and illustrated: *Geostiba* (*Tropogastrosipalia*) *angularis* spec. nov. (region to the north of Lechuri); *G.* (*Sibiota*) *tbatanana* spec. nov. (Tbatana Range) and *G.* (*S.*) *gomborica* spec. nov. (Gombori Range) of the *G. bituberculata* group; *G.* (*Sibiota*) *bulbosa* spec. nov. (Gombori Range) and *G.* (*S.*) *effeminata* spec. nov. (region to the south of Abano pass) of the *G. carinicollis* group. The distribution of *Geostiba* (*Sipalotricha*) *cingulata* (EPPELSHEIM, 1878) is revised and illustrated; a previous record from Azerbaijan is regarded as probably incorrect (result of mislabeled material). The distributions of the species of the subgenus *Sibiota* CASEY, 1906 recorded from Georgia east of South Ossetia are mapped. Additional records of nine species are reported. The *Geostiba* fauna of the Caucasus region sensu lato is now represented by a total of 55 named species, 34 of which belong to the subgenus *Sibiota*. Twenty-six species have been recorded from Georgia.

### Taxonomic acts

*Geostiba angularis* spec. nov. – urn:lsid:zoobank.org:act:DCA99368-5FA2-427B-8243-55F4FEEECAEE

*Geostiba tbatanana* spec. nov. – urn:lsid:zoobank.org:act:66802B79-AD37-41DA-B8A0-09C182FA781C

*Geostiba gomborica* spec. nov. – urn:lsid:zoobank.org:act:FD3882CB-F37A-4EFC-A138-EA492241DBB2

*Geostiba bulbosa* spec. nov. – urn:lsid:zoobank.org:act:86931408-4E5A-430D-B3A9-2CDCF74FE9E5

*Geostiba effeminata* spec. nov. – urn:lsid:zoobank.org:act:3AF3DE93-D325-47BC-8C20-47CAE87A9B3A

### Key words

Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, *Tropogastrosipalia*, *Sibiota*, taxonomy, new species, Caucasus region, Georgia, new records, distribution maps

### Zusammenfassung

Fünf Arten der Gattung *Geostiba* THOMSON, 1858 aus Kachetien, Nordost-Georgien, werden beschrieben und abgebildet. *Geostiba* (*Tropogastrosipalia*) *angularis* spec. nov. (Gebiet nördlich von Lechuri); *G.* (*Sibiota*) *tbatanana* spec. nov.



(Tbatana Range) und *G. (S.) gomborica* spec. nov. (Gombori Range) aus der *G. bituberculata*-Gruppe sowie *G. (Sibiota) bulbosa* spec. nov. (Gombori Range) und *G. (S.) effeminata* spec. nov. (Gebiet südlich des Abano-Passes) aus der *G. carinicolis*-Gruppe. Die Verbreitung von *Geostiba (Sipalotricha) cingulata* (EPPELSHEIM, 1878) wird revidiert und anhand einer Karte illustriert; der einzige bisherige Nachweis aus Aserbaidzhan wird als irrtümlich betrachtet (Fehl-etikettierung). Weitere Nachweise von neun Arten werden gemeldet. Aus der Kaukasusregion sensu lato sind damit gegenwärtig insgesamt 55 benannte *Geostiba*-Arten bekannt, von denen 34 zur Untergattung *Sibiota* gehören. Aus Georgien wurden bislang 26 benannte Arten nachgewiesen.

## Schlüsselwörter

Coleoptera, Staphylinidae, Aleocharinae, *Geostiba*, *Tropogastrosipalia*, *Sibiota*, Taxonomie, neue Arten, Kaukasus-region, Georgien, neue Nachweise, Verbreitungskarten

## Introduction

The *Geostiba* fauna of Georgia was previously represented by 21 species, that of the Caucasus region sensu lato by 50 species in four subgenera: *Sibiota* CASEY, 1906: 30 species; *Tropogastrosipalia* SCHEERPELTZ, 1951: eleven; *Sipalotricha* SCHEERPELTZ, 1951: seven; *Geostiba* THOMSON, 1858: two species. For more information on the distributions, previously established synonymies, and the history of research on Caucasian *Geostiba* see ASSING (2016a, b, 2017, 2018, 2019, 2021). Except for two more widespread wing-dimorphic species, all the Caucasian representatives of the genus are locally or regionally endemic.

Two field trips to Georgia conducted in 2022, one of them conducted by Michael Schülke (Berlin) in May and one in summer (July/August) by Michael Schülke and the author yielded a total of more than 300 specimens of *Geostiba*. A study of this material revealed that it was composed of 13 species, four of them undescribed and described in this paper. An additional undescribed species was discovered among previously identified material.

## Material and methods

The material examined in the present study is deposited in the following collections:

MNB Museum für Naturkunde, Berlin (incl. coll. Schülke)

cAss author's private collection

The morphological studies were conducted using Stemi SV 11 (Zeiss) and Discovery V12 (Zeiss) microscopes, and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using digital cameras (AxioCam ERc 5s, Nikon Coolpix 995), as well as Labscope and Picolay software. The maps were created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the apex of the abdomen, the length of

the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the clypeus to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

## Results

*Geostiba (Geostiba) circellaris* (GRAVENHORST, 1806)

**Material examined:** GEORGIA: Mtskheta-Mtianeti: 1 ♂, SE Stepantsminda, SE Sno, 42°35'18"N, 44°39'32"E, 1800 m, secondary montane mixed forest (birch, pine, etc.), litter sifted, 19.VII.2022, leg. Assing (cAss); 15 ♂♂, 12 ♀♀, 13 exs., SE Stepantsminda, SE Sno, 42°35'59"N, 44°39'13"E, 1770 m, floodplain forest with *Salix*, moist litter near *Salix* sifted, 19.VII.2022, leg. Assing & Schülke (cAss, MNB); 1 ♂, 3 exs., same data, but fine gravel near water floated and sifted (cAss, MNB); 1 ♀, SW Stepantsminda, W Kobi, 42°34'52"N, 44°27'48"E, 2020 m, litter under bushes near river sifted, 19.VII.2022, leg. Assing (cAss). Kakheti: 2 ♂♂, 1 ♀, SW Telavi, 41°51'52"N, 45°19'52"E, 1320 m, beech forest, moist litter sifted, 24.VII.2022, leg. Assing (cAss); 4 ♂♂, 4 ♀♀, 4 exs., Gombori pass, 41°51'55"N, 45°16'50"E, 1650 m, mountain meadow with scattered trees and bushes, litter beneath *Salix* etc. sifted, 26.VII.2022, leg. Assing & Schülke (NMB, cAss); 17 ♂♂, 20 ♀♀, 22 exs., same data, but 1.VIII.2022 (NMB, cAss); 1 ♂, 3 ♀♀, NE Telavi, NE Lapankuri, 42°04'37"N, 45°36'56"E, 640 m, floodplain forest, litter sifted, 29.VII.2022, leg. Assing (cAss).

*Geostiba circellaris* is widespread across the Palaearctic regions, its distribution ranging from West Europe eastwards to East Siberia. Though common in the northern and central parts of the West Palaearctic region, its



known distribution in Georgia is confined to Mtskheta-Mtianeti and Kakheti. For previous records from these regions see ASSING (2016a).

*Geostiba (Tropogastrosipalia) tiflisensis* PACE, 1996

(Figs 21–23)

**Material examined:** GEORGIA: Mtskheta-Mtianeti: 1 ♂, 1 ♀, N Tbilisi, Tbilisi National Park, 41°54'29"N, 44°54'44"E, 1400 m, beech forest, litter near old beech trunks and in ditch next to road sifted, 2.VIII.2022, leg. Assing (cAss). Kakheti: 1 ♀, WSW Telavi, 41°52'11"N, 45°15'09"E, 1400 m, ditch near road margin with *Acer* and bushes, litter sifted, 26.VII.2022, leg. Assing (cAss).

The original description of this species is based on type material from the vicinity of Ananuri. There is some uncertainty as to whether the above specimens and another previous record from the environs of Telavi (ASSING 2017) are really conspecific with *G. tiflisensis*. Only few small males are currently available from the vicinity of the type locality and from other localities. There are slight differences in the shape of the cristal process of the aedeagus (Figs 21–23), but more material is needed to clarify if these differences should be attributed to intra- or interspecific variation.

*Geostiba (Tropogastrosipalia) simplicicollis* ASSING, 2019

**Material examined:** GEORGIA: Kakheti: 3 exs. [identified by M. Schülke], NNE Akhmeta, N Birkiani, 42°13'07"N, 45°18'40"E, 760 m, mixed forest margin, moist litter and soil near small stream sifted, 27.VII.2022, leg. Assing (MNB).

The original description of this recently described species is based on few type specimens from two localities to the north of Birkiani. The above material was collected at the type locality.

*Geostiba (Tropogastrosipalia) angularis* spec. nov.

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(Figs 1–6, 19–20)

**Type material:** Holotype ♂: “GEORGIA [53] – Kakheti, N Lechuri, 42°10'22"N, 45°25'52"E, 620 m, litter sifted, 28.VII.2022, V. Assing / Holotypus ♂ *Geostiba angularis* sp. n. det. V. Assing 2022” (cAss). Paratypes: 9 ♂♂, 16 ♀♀: same data as holotype (cAss, MNB); 9 exs.: same data, but leg. Schülke (MNB); 8 exs.: “Georgia: Kakheti: N Lechuri, 42°10'23"N, 45°25'51"E, 610 m, small spring, alder litter sifted, 21.V.2022, leg. M. Schülke [GE2022-13]” (MNB); 18 exs.: same data, but 26.V.2022 [GE2022-13a] (MNB).

**Etymology:** The specific epithet (Latin, adjective) alludes to the ventro-basally angled cristal process of the aedeagus.

**Description:** Body length 3.0–3.9 mm; length of forebody 1.3–1.5 mm. Habitus as in Fig. 1. Colouration: body reddish-brown to blackish-brown; legs yellow; antennae dark-brown to blackish-brown with the basal 2–3 antennomeres somewhat paler. Microsculpture of forebody more or less pronounced, more pronounced in large males than in small males and in females.

Head (Fig. 2) more or less distinctly longer than broad, more oblong in large males than in small males and in females. Eyes small, one-third as long as postocular region in dorsal view at most, composed of approximately 20 ommatidia. Pronotum (Fig. 2) significantly broader than head. Elytra (Fig. 2) less than half as long as pronotum, with moderate sexual dimorphism. Abdomen as in Fig. 3; posterior margin of abdominal tergite VII without palisade fringe.

Large ♂: head and pronotum nearly matt due to pronounced microsculpture (Fig. 2); pronotum distinctly oblong, nearly 1.1 times as long as broad, posterior margin strongly convex, obtusely pointed in the middle (Fig. 2); elytra with dense and coarsely granulose punctation, without other modifications (Fig. 2); abdomen (Fig. 3) with anterior tergites unmodified, tergite VII with obliquely erect, apically acute, and broad-based postero-median process (Fig. 4); median lobe of aedeagus (Figs 19–20) approximately 0.35 mm long, cristal process ventro-basally angled in lateral view.

♀: head and pronotum with shallow microsculpture and some shine; elytra with very fine and non-granulose punctation; spermatheca (Figs 5–6) not distinctive.

**Intraspecific variation:** The male secondary characters (microsculpture of the forebody, shape of the head, shape of pronotum, and the size and length of the postero-median process of tergite VII are subject to pronounced interspecific variation (as is usual in the subgenus); they are more or less reduced in smaller males.

**Comparative notes:** Based on the similar primary and secondary sexual characters, *G. angularis* is closely allied to the geographically close *G. tiflisensis* and *G. simplicicollis* ASSING, 2019. It is distinguished from them by distinctly larger body size, darker average colouration, a more oblong head, more pronounced modifications of the male pronotum, and by a significantly larger aedeagus (*G. tiflisensis* and *G. simplicicollis*: median lobe of aedeagus 0.24–0.27 mm long) with a differently shaped cristal process.

**Distribution and natural history:** The type locality is situated to the north of Lechuri. The specimens were sifted from litter in a forest margin at an altitude of 620 m, together with numerous specimens of the anophthalmous aleocharine *Pseudotyphlopasilia kakhetica* ASSING, 2021.



*Geostiba (Sipalotricha) cingulata* (EPPELSHEIM, 1878)  
(Map 1)

**Material examined:** Georgia: Kvemo Svaneti: 4 ♂♂, 11 ♀♀, E Lentekhi, S Panaga, 42°49'46"N, 42°55'09"E, 1160 m, deciduous forest, litter sifted, 10.VIII.2022, leg. Assing (cAss). Racha: 2 ♂♂, 1 ♀, NE Ambrolauri, mountain road to Likheta, 42°35'18"N, 43°13'43"E, 730 m, stream valley with moist mixed deciduous forest (Alnus, Corylus, Carpinus), litter sifted, 16.VII.2022, leg. Assing (cAss). Mtskheta-Mtianeti: 1 ♂, 1 ex. SW Pasanauri, 42°19'35"N, 44°38'50"E, 1180 m, forest margin with *Corylus* etc., litter sifted, 22.VII.2022, leg. Assing & Schülke (MNB, cAss).

*Geostiba cingulata* is the most common species of the genus in most of Georgia. This species has also been reported from Azerbaijan, based on material from "Helenendorf" originating from the Reitter collection (ASSING 2018). As has been shown by ASSING & SCHÜLKE (2017), such material may have been mislabeled. Therefore, and in view of the absence of any other records from Azerbaijan or from Armenia, the presence of *G. cingulata* in Azerbaijan appears highly doubtful and requires confirmation. For the time being, the record from "Helenendorf" is regarded as incorrect. The currently confirmed distribution is illustrated in Map 1.

*Geostiba (Sibiota) batumiensis* PACE, 1996

**Material examined:** Georgia: Guria: 2 ♂♂, S Osurgeti, Achi, 41°50'03"N, 41°59'32"E, 380 m, stream valley with mixed deciduous forest (beech, alder), soil washing, 5.VIII.2022, leg. Assing (cAss); 1 ex., same data, but sifted, leg. Schülke (MNB); 5 ♂♂, 3 ♀♀, 20 exs., SE Ozurgeti, SSE Gomi, 41°50'54"N, 42°07'02"E, 800 m, forest with *Carpinus*, *Castanea*, and rhododendron undergrowth, litter sifted, partly around very large dead trunk, 7.VIII.2022, leg. Assing & Schülke (cAss, MNB).

The distribution of this species is confined to the extreme west of the Lesser Caucasus, where it is rather common. The specimens from the region to the south-southeast of Gomi represent the easternmost record. For previous records see ASSING (2005, 2016b, 2017, 2018, 2019, 2021).

*Geostiba (Sibiota) largata* ASSING, 2016

**Material examined:** GEORGIA: Imereti: 7 exs. [identified by M. Schülke], S Nakerala Pass, 42°23'11"N, 42°58'47"E, 1450 m, dolina with mixed deciduous forest, litter sifted, 17.V.2022, leg. Schülke (MNB). Racha: 5 exs. [identified by M. Schülke], S Shaori

Reservoir, 42°23'47"N, 43°01'59"E, 1100 m, mixed forest, litter & dead wood near rock sifted, 17.V.2022, leg. Schülke (MNB).

The known distribution is confined to the region near the Nakerala pass.

*Geostiba (Sibiota) recta* ASSING, 2016

**Material examined:** Georgia: Kvemo Svaneti: 6 ♂♂, 8 ♀♀, E Lentekhi, S Panaga, 42°49'46"N, 42°55'09"E, 1160 m, deciduous forest, litter sifted, 10.VIII.2022, leg. Assing (cAss).

The distribution of *G. recta* is confined to the environs of Lentekhi. For a recent distribution map see (ASSING 2021).

*Geostiba (Sibiota) kobrisensis* PACE, 1996

(Map 2)

**Material examined:** Georgia: Mtskheta-Mtianeti: 1 ♀, NW Kvesheti, 42°27'20"N, 44°31'42"E, 1540 m, stream below waterfall, litter beneath *Corylus* sifted, 23.VII.2022, leg. Schülke (MNB).

This species is endemic to region to the south of Kazbegi mountain (Map 2). The previous record from the Gombori Range (ASSING 2016b) refers to *G. gomborica* (see below).

*Geostiba (Sibiota) breviflagellata* ASSING, 2018

**Material examined:** Georgia: Guria: 1 ♂, Guria, SSW Chokhatauri, 41°57'58"N, 42°13'08"E, 160 m, ruderal stream valley, litter sifted, 5.VIII.2022, leg. Schülke (MNB); 1 ♂, SE Chokhatauri, Kvabgha-Zoti, 41°54'26"N, 42°25'45"E, 680 m, stream valley with beech, alder, etc., litter sifted, 6.VIII.2022, leg. Schülke (MNB).

The known distribution of *G. breviflagellata* is confined to the north slopes of the central Lesser Caucasus. For previous records see ASSING (2018, 2019, 2021).

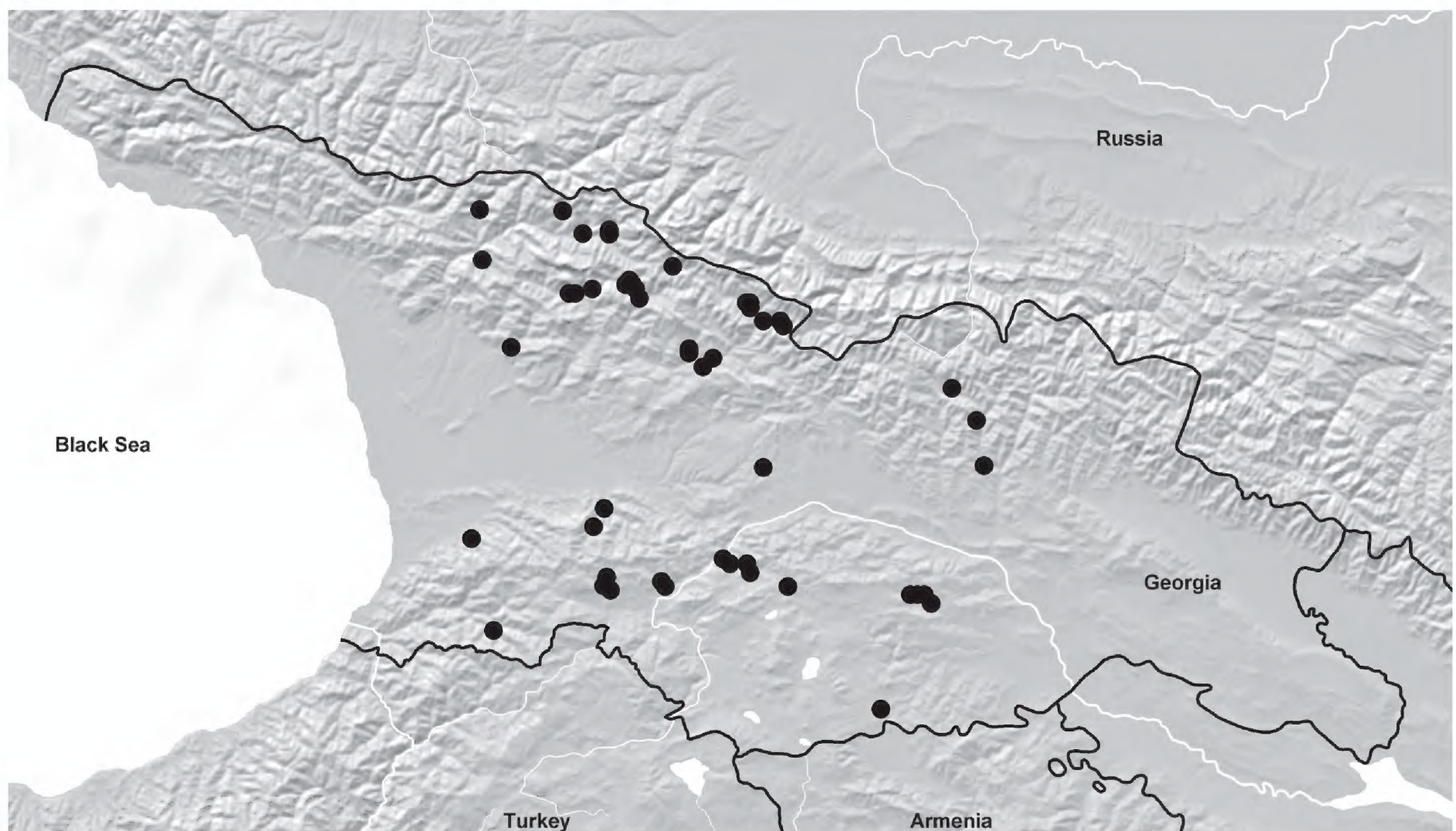
*Geostiba (Sibiota) tbatanana* spec. nov.

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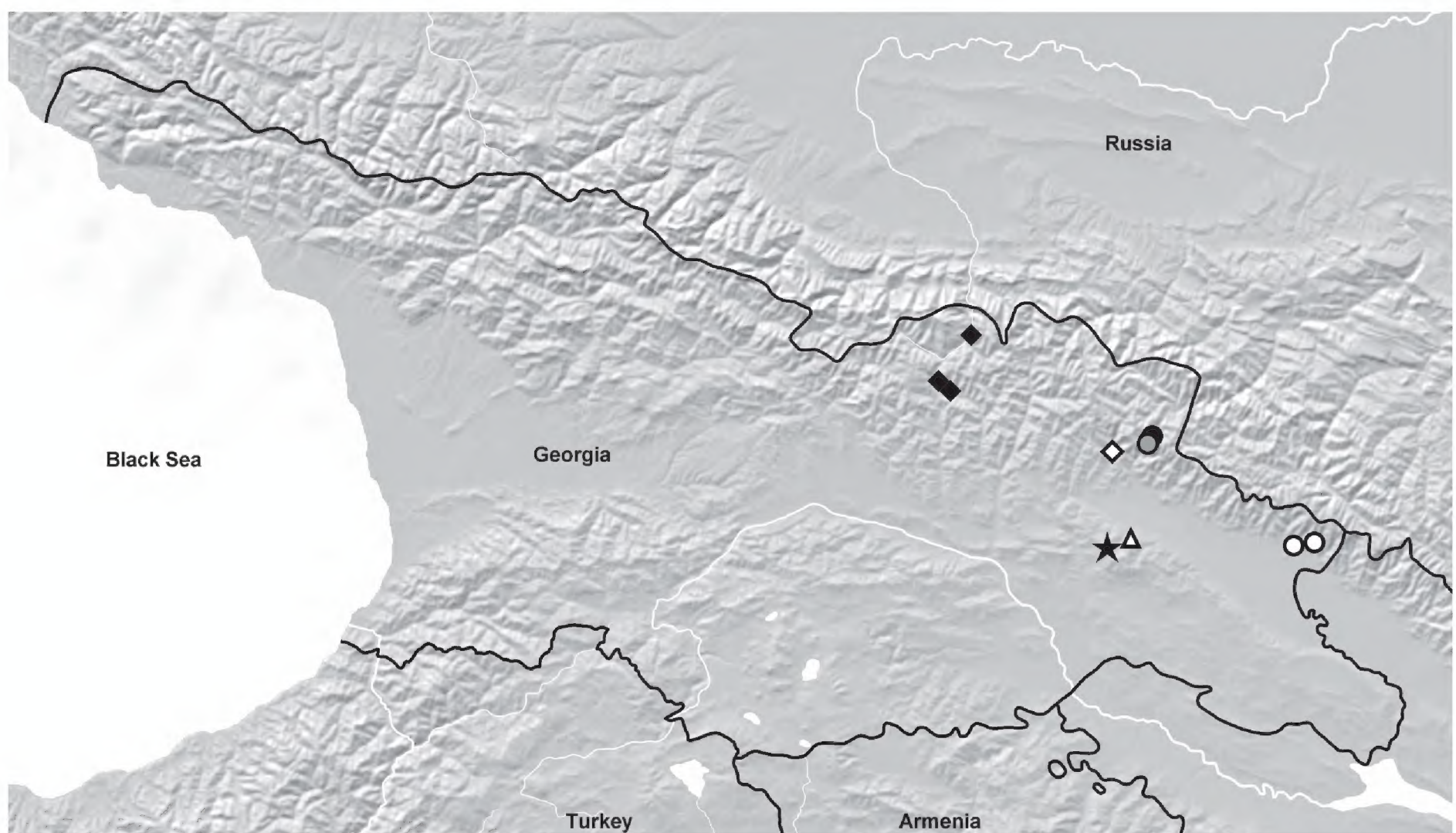
(Figs 7–9, 24–25, Map 2)

**Type material:** Holotype ♂: "GEORGIA [52a] – Kakheti, NNE Akhmeta, N Birkiani, 42°13'07"N, 45°18'40"E, 760 m, 27.VII.2022, V. Assing / Holotypus ♂ *Geostiba tbatanana* sp. n. det. V. Assing 2022" (cAss).





Map 1: Distribution of *Geostiba cingulata*, based on revised records.



Map 2: Distributions of *Geostiba* species of the subgenus *Sibiota* in Georgia east of South Ossetia: *G. kobrisensis* (black diamonds); *G. tbatanana* (white diamond); *G. effeminata* (black and grey circles); *G. kakhetiana* (white and grey circles); *G. gomborica* (white triangle); *G. bulbosa* (black star).

**Etymology:** The specific epithet is an adjective derived from Tbatana, the name of the mountain range where the type locality is situated.

**Description:** Body length 2.8 mm; length of forebody 1.2 mm. Habitus robust (Fig. 7). Colouration: body reddish; legs yellow; antennae pale-reddish. Forebody

with distinct microsculpture and nearly matt. Head weakly oblong. Eyes reduced to minute rudiments, without ommatidia, but with pigmentation. Pronotum (Fig. 8) approximately as broad as long and 1.27 times as broad as head. Elytra (Fig. 8) short and broad, 0.67 times as long and 1.25 times as broad as pronotum. Other external characters not distinctive.



♂: elytra (Fig. 8) extensively and deeply impressed, on either side of suture with pronounced, strongly elevated and sharp carina reaching posterior elytral margin; tergite VII (Fig. 9) with a pair of posteriorly converging, glossy, and rather broad carinae in postero-median portion; median lobe of aedeagus rather large, 0.32 mm long, and shaped as in Figs 24–25.

♀: unknown.

**Comparative notes:** Based on the external (colouration; eyes without ommatidia; pronotum without impressions) and sexual characters (morphology of the aedeagus), *G. tbatanana* belongs to the *G. bituberculata* group (see ASSING 2016b). The geographically closest previously described representative of this group is *G. kobrisensis* PACE, 1996 from the Kazbegi region. *Geostiba tbatanana* is distinguished from this species by larger size, darker colouration, much sharper and more strongly elevated sutural carinae and more pronounced impressions of the male elytra, broader and more strongly converging carinae on the male tergite VIII, and a larger aedeagus of slightly different shape. For illustrations of *G. kobrisensis* see PACE (1996) and ASSING (2005). For characters distinguishing *G. tbatanana* from *G. gomborica* see the comparative notes in the following description.

**Distribution and natural history:** The type locality is situated at the base of the east slope of the Tbatana Range, to the north of Birkiani (Georgia: Kakheti) (Map 2). The holotype was collected by washing soil from the margin of a mixed deciduous forest near a stream at an altitude of 760 m.

*Geostiba (Sibiota) gomborica* spec. nov.

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(Figs 10–12, 26–27, Map)

**Type material:** Holotype ♂: “GEORGIA, Caucasus, [10] (Kachetia), Tsiv-Gombori Mts. rng., 5 km W of Telavi, sift, *Fagus orientalis* forest, 41°53'59.6N 45°23'43.2"E, 1091 m, 08.VII.2015, leg. A. Pütz / Holotypus ♂ *Geostiba gomborica* sp. n. det. V. Assing 2022” (cAss).

**Etymology:** The specific epithet is an adjective derived from Gombori, the name of the mountain range where the type locality is situated.

**Comment:** The holotype was reported as *G. kobrisensis* by ASSING (2016b). The illustrated aedeagus (ASSING 2016b: figures 1–2) refers to *G. gomborica*, not to *G. kobrisensis*.

**Description:** Body length 2.8 mm; length of forebody 1.1 mm. Habitus slender (Fig. 10). Colouration: body pale-reddish; legs yellow; antennae yellowish-red. Forebody with microsculpture, but somewhat glossy. Head

(Fig. 11) weakly oblong. Eyes reduced to minute rudiments, without ommatidia and without pigmentation. Pronotum (Fig. 11) weakly transverse, 1.04 times as broad as long and 1.24 times as broad as head. Elytra (Fig. 11) 0.6 times as long and 1.12 times as broad as pronotum. Other external characters not distinctive.

♂: elytra (Fig. 11) not impressed, on either side of suture with pronounced elevation with coarsely granulate punctation, this elevation not reaching posterior elytral margin; tergite VII (Fig. 12) with a pair of small, posteriorly weakly converging oblong tubercles in postero-median portion; median lobe of aedeagus small, 0.24 mm long, and shaped as in Figs 26–27.

♀: unknown.

**Comparative notes:** Like *G. tbatanana*, *G. gomborica* belongs to the *G. bituberculata* group (see ASSING 2016b). It is distinguished from *G. tbatanana* by smaller body size, a more slender habitus (particularly more slender elytra), paler colouration, slightly more transverse antennomeres IV–X, completely different modifications of the male elytra and the male tergite VIII, and a much smaller aedeagus of different shape. It differs from *G. kobrisensis*, with which it was previously confounded, by shorter sutural elevations on the elytra, shorter and posteriorly converging tubercles on the male tergite VII, and by slight differences in the shape of the aedeagus. The geographically closest *Sibiota* species, *G. bulbosa* (see below), belongs to the *G. carinicornis* group and is readily distinguished from *G. gomborica* by eyes composed of at least 5 ommatidia and by the different morphology of the aedeagus.

**Distribution and natural history:** The type locality is situated at the base of the north slope of the Gombori Range, to the west of Telavi (Georgia: Kakheti) (Map 2). The holotype was collected by sifting litter in a beech forest at an altitude of approximately 1090 m.

*Geostiba (Sibiota) bulbosa* spec. nov.

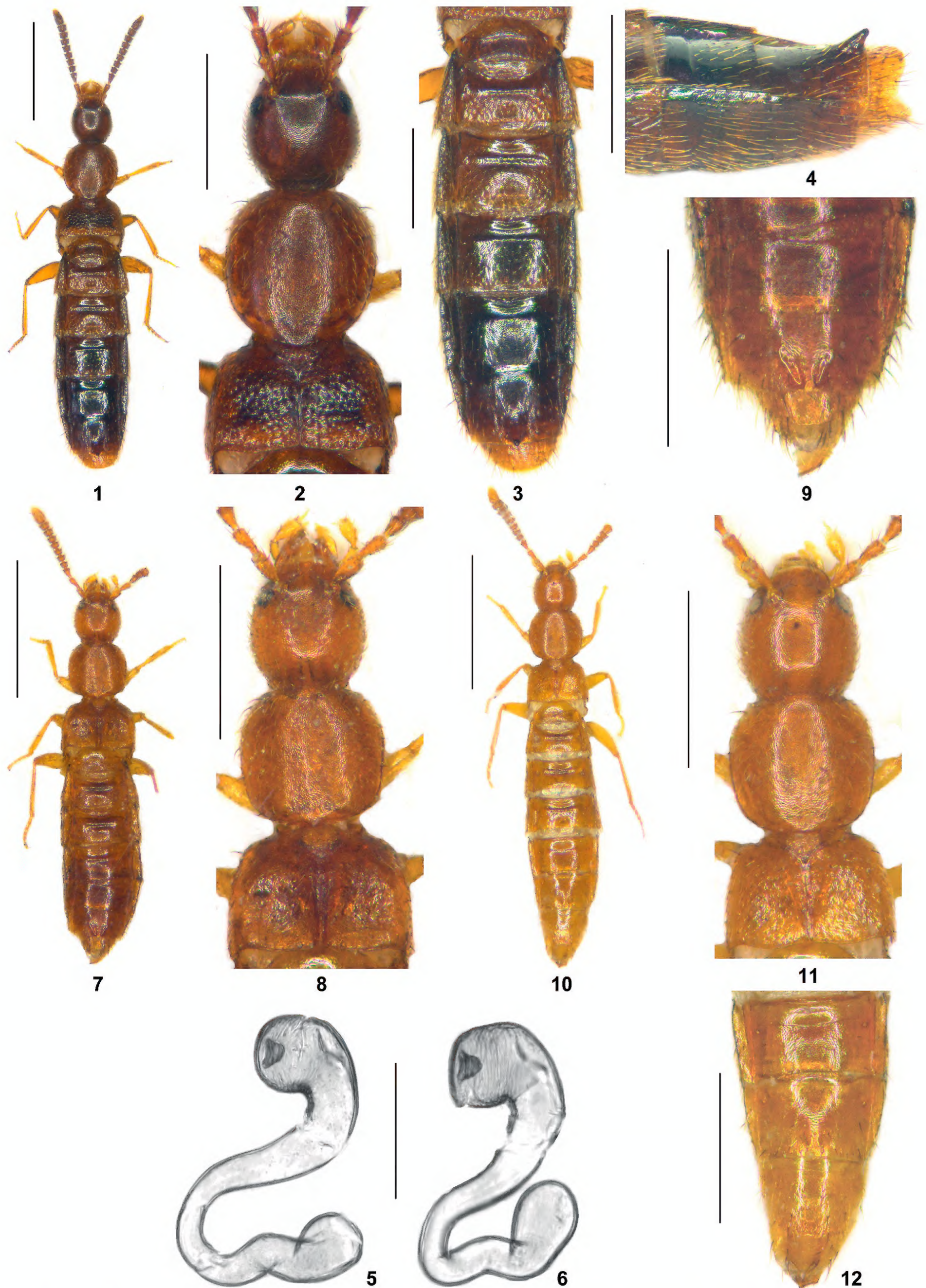
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(Figs 13–15, 28–32, Map 2)

**Type material:** Holotype ♂: “GEORGIA [50b] – Kakheti, Gombori pass, 41°51'55"N, 45°16'50"E, 1650 m, litter sifted, 1.VIII.2022, V. Assing / Holotypus ♂ *Geostiba bulbosa* sp. n. det. V. Assing 2022” (cAss). Paratypes: 3 ♂♂, 4 ♀♀: same data as holotype (cAss).

**Etymology:** The specific epithet (Latin, adjective) alludes to the bulbous proximal end of the spermathecal capsule.

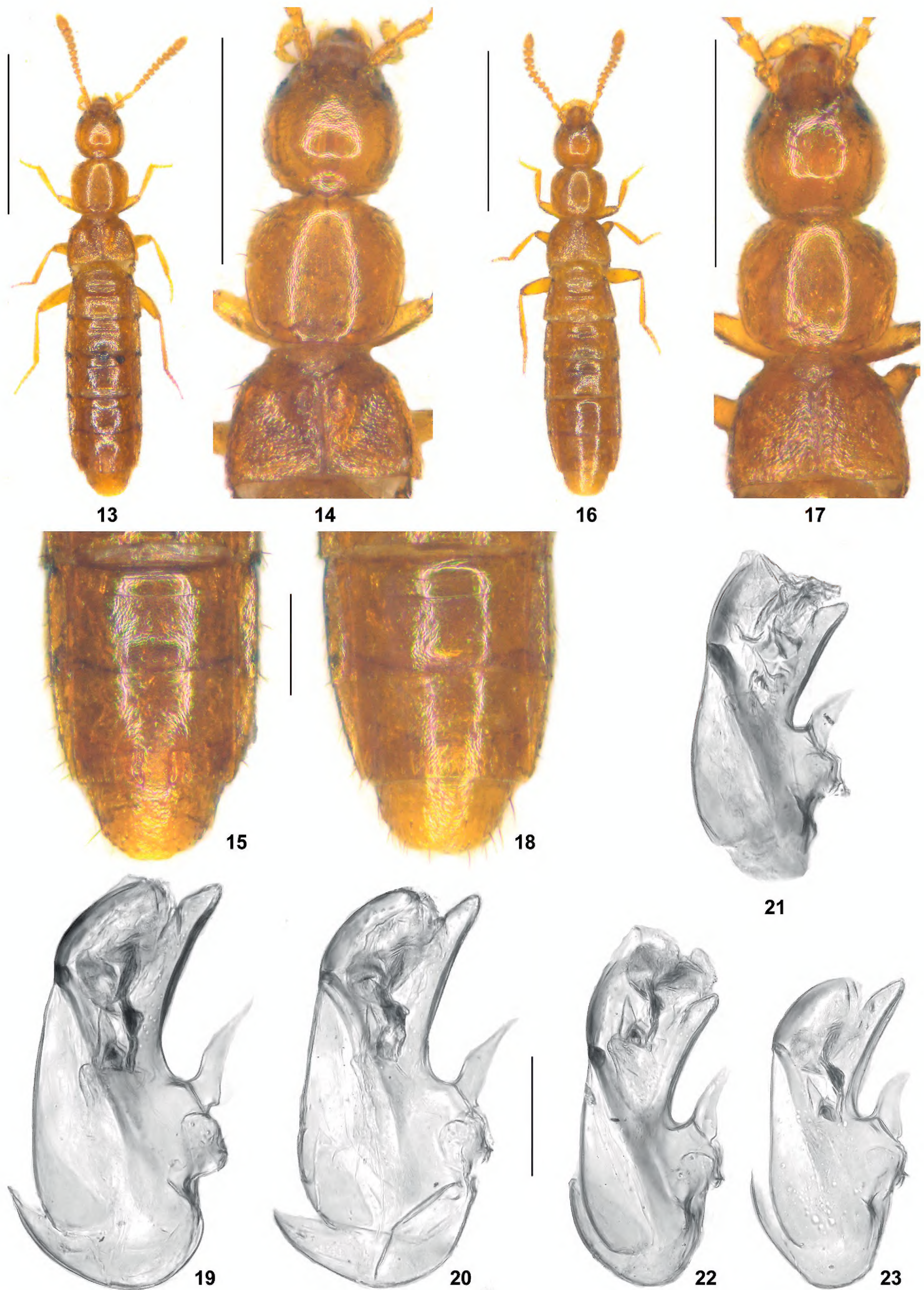
**Description:** Body length 2.1–2.7 mm; length of forebody 0.9–1.0 mm. Habitus as in Fig. 13. Colouration: body reddish-yellow to reddish with the preapical abdominal segments often indistinctly darker; legs and





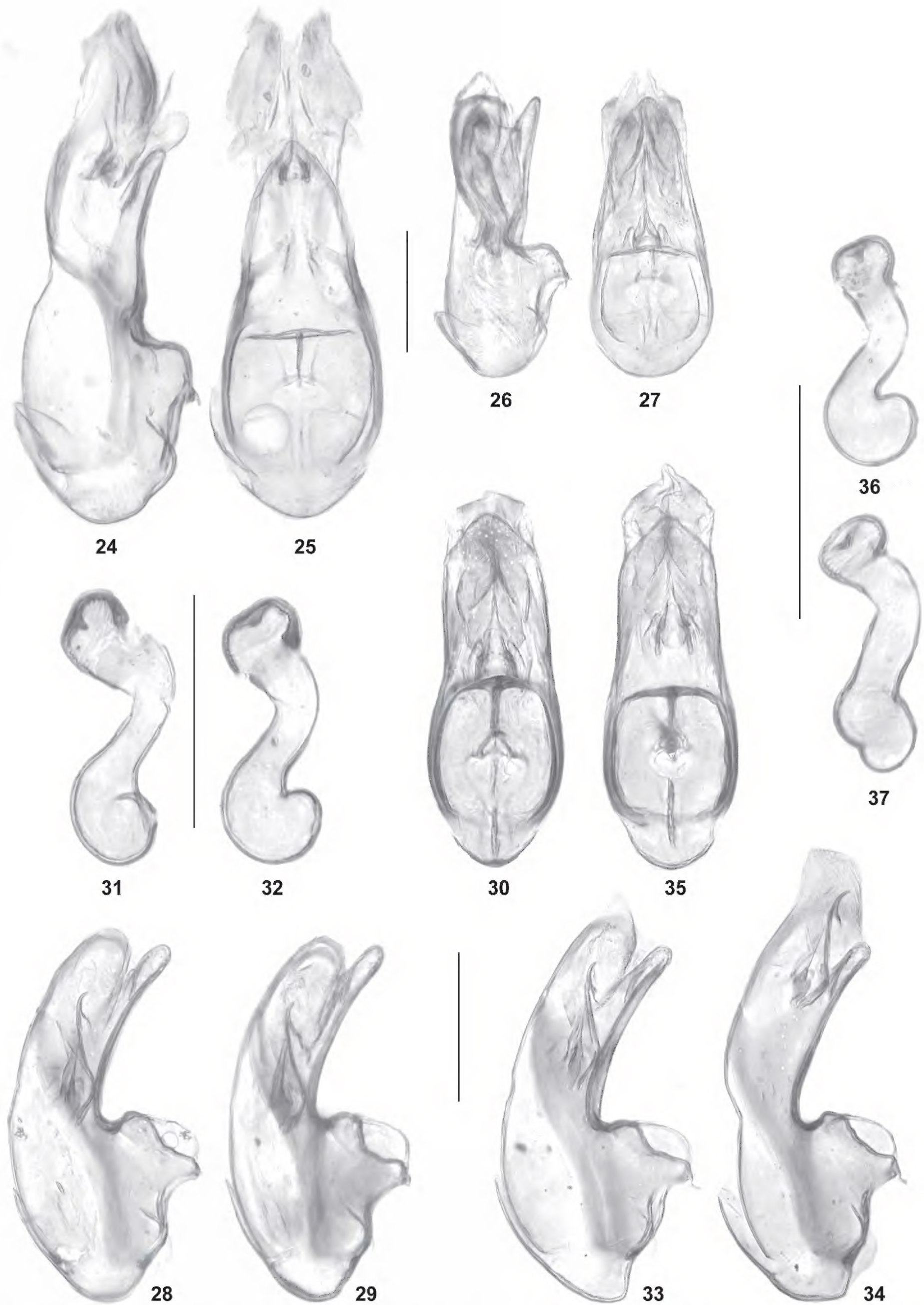
Figs 1–12: *Geostiba angularis* (1–6), *G. tbatanana* (7–9), and *G. gomborica* (10–12). 1, 7, 10 – male habitus; 2, 8, 11 – male forebody; 3 – male abdomen; 4 – male abdominal segments VI–VIII in lateral view; 5–6 – spermatheca; 9, 12 – male abdominal segments VI–X in dorsal view. Scale bars: 1, 7, 10: 1.0 mm; 2–4, 8–9, 11–12: 0.5 mm; 5–6: 0.1 mm.





Figs 13–23: *Geostiba bulbosa* (13–15), *G. effeminata* (16–18), *G. angularis* (19–20), and *G. tiflisensis* (21–23; 21: vicinity of type locality; 22: Tbilisi National Park; 23: Telavi env.). 13, 16, 10 – male habitus; 14, 17 – male forebody; 15, 18 – male abdominal segments VI–VIII in dorsal view; 19–23 – median lobe of aedeagus in lateral view. Scale bars: 13, 16: 1.0 mm; 14, 17: 0.5 mm; 15, 18: 0.2 mm; 19–23: 0.1 mm.





Figs 24–37: *Geostiba thatanana* (24–25), *G. gomborica* (26–27), *G. bulbosa* (28–32), and *G. effeminata* (33–37). 24–30, 33–35 – median lobe of aedeagus in lateral and in ventral view; 31–32, 36–37 – spermatheca. Scale bars: 0.1 mm.



antennae yellow. Eyes reduced to minute rudiments, composed of usually 5–8 ommatidia with pigmentation. Forebody as in Fig. 14. Other external characters not distinctive.

♂: elytra (Fig. 14) extensively depressed to shallowly impressed, near scutellum with pronounced elevations with coarsely granulose punctation, elsewhere with less coarse granulose punctation; abdominal tergite VII (Fig. 15) posteriorly with a median pair of more or less parallel carinae; posterior margin of tergite VIII convex, in the middle truncate; posterior margin of sternite VIII broadly convex; median lobe of aedeagus 0.25 mm long and shaped as in Figs 28–30.

♀: elytra unmodified; tergite VIII and sternite VIII with broadly convex posterior margin; spermatheca (Figs 31–32) with bulbous proximal end.

**Comparative notes:** Based on the external (pale colouration; eyes with ommatidia) and sexual characters (crista apicalis of aedeagus short, without membranous portion), *G. bulbosa* belongs to the *G. carinicornis* group (see ASSING 2016b). Among the Georgian representatives of this group (except the following new species), this species is characterised particularly by the conspicuous shape of the spermatheca. For illustrations of other Georgian representatives of the *G. carinicornis* group see ASSING (2016b, 2019).

**Distribution and natural history:** The type locality is situated at the Gombori pass (Map 2) at 1650 m. The specimens were sifted from deep litter in a beech forest.

*Geostiba (Sibiota) effeminata* spec. nov.

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(Figs 16–18, 33–37, Map 2)

**Type material:** Holotype ♂: “GEORGIA [60] – Kakheti, SW Abano pass N Lechuri, 42°16'01"N, 45°30'20"E, 2270 m, 30.VII.2022, V. Assing / Holotypus ♂ *Geostiba effeminata* sp. n. det. V. Assing 2022” (cAss). Paratypes: 1 ♀: same data as holotype (cAss); 1 ♂, 1 ♀: same data, but leg. M. Schülke (MNB); 1 ♂, 3 ♀ ♀ [1 slightly teneral]: “GEORGIA [61] – Kakheti, SW Abano pass N Lechuri, 42°15'37"N, 45°30'11"E, 2240 m, 30.VII.2022, V. Assing” (cAss); 1 ♀: “GEORGIA [62] – Kakheti, Lechuri–Abano pass, 42°14'27"N, 45°29'42"E, 1510 m, 30.VII.2022, V. Assing” (cAss).

**Etymology:** The specific epithet (Latin, adjective: effeminate) alludes to the complete absence of modifications of the male elytra and the male tergite VII.

**Description:** Body length 2.1–2.5 mm; length of forebody 0.9–1.0 mm. Habitus as in Fig. 16. Colouration: body reddish-yellow to reddish with the preapical

abdominal segments often indistinctly darker; legs and antennae yellow. Eyes reduced to minute rudiments, composed of usually 5–6 ommatidia with pigmentation. Forebody as in Fig. 17. Other external characters not distinctive.

♂: elytra (Fig. 17) unmodified, with sparse and very fine punctation; abdominal tergite VII (Fig. 18) unmodified; posterior margin of tergite VIII convex, in the middle truncate; posterior margin of sternite VIII broadly convex; median lobe of aedeagus 0.25 mm long and shaped as in Figs 33–35.

♀: elytra unmodified; tergite VIII and sternite VIII with broadly convex posterior margin; spermatheca (Figs 36–37) with bulbous proximal end.

**Comparative notes and comment:** As can be inferred from the nearly identical primary sexual characters, *G. effeminata* is undoubtedly very closely allied to, and probably the adelphotaxon of, *G. bulbosa*. It is distinguished from this species primarily by the complete absence of modifications of the male elytra and the male tergite VII, additionally also by a baso-ventrally somewhat angled median lobe of the aedeagus (lateral view) and by a slightly smaller and more slender spermatheca.

Despite the similarity of the aedeagus and the spermatheca, *G. effeminata* is hypothesised to be specifically distinct for two reasons. First, in all four males of *G. bulbosa* the male secondary sexual characters are distinct, whereas there is no sign of modifications of the male elytra and tergite VII in any of the three males of *G. effeminata*, suggesting that these differences are constant. Second, if both populations were regarded as conspecific, the distribution would be highly implausible. The mountain range where *G. effeminata* was found (at high altitude) is separated from the Gombori Range, where *G. bulbosa* was discovered (also at high altitude), by the deep and wide valley of Alazani River.

**Distribution and natural history:** The species was found in three close localities near the Abano pass (Map 2) at altitudes of 1510–2270 m. Interestingly, the female from the locality at 1510 m (sample number 62) was found at the type locality of *G. kakhnetiana*, of which not a single specimen was found in summer 2022. The type material was sifted from litter, roots, and stony soil in mountain stream valleys and near large rocks.

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